

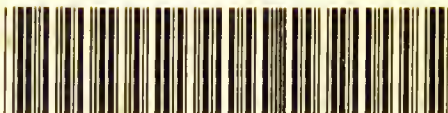
FROM

The Surgical

TO THE

Mechanical Art.

M18122



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SILVER MEDAL, AND MEDAL OF SUPERIORITY,
1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882,
1883, 1884, 1885, 1886.

HIGHEST AWARD AND SILVER MEDAL
PARIS EXHIBITION, 1889,

AND

ROYAL MILITARY EXHIBITION, LONDON, 1890

FROM THE SURGICAL

TO THE

MECHANICAL ART.

A Treatise

ON THE

MANUFACTURE OF

ARTIFICIAL LIMBS.

J. & E. FERRIS,

ARTIFICIAL LIMB MAKERS,

48, Gt. Russell Street,
London.

1892.

W. & J. BALLS, Wholesale Printers and Bookbinders, King's Cross, W.C.

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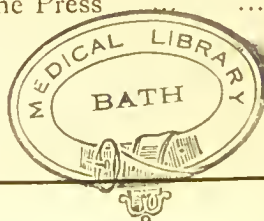
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INTRODUCTION.



THE loss of a limb, whether through accident, disease, or other cause, is a sad misfortune. A person so circumstanced would naturally institute enquiries, or ask his Medical Attendant the question, "Where, or to whom am I to apply to be furnished with the most efficient substitute obtainable?" and the reply frequently is, "Oh! any maker will do," and the patient goes to a limb maker, whose name, and the limbs he manufactures, have been before the public for a considerable time. What is the result? He obtains a leg made on the most antiquated principles, and perfectly useless if his desire is to walk naturally and with comfort. And why? because these makers are simply content to rely on their ancient productions, and do not lay themselves out to provide for, and suit the advanced requirements of the present time. Our aim is to afford the greatest possible relief to those who are so unfortunately placed as to require substitutes, and to supply them with the most natural as well as the most useful Artificial Limbs that can be made.

An Arm, such as is usually supplied, is simply an appendage, of which scarcely the slightest use can be made. With arms, having hands and fingers manufactured by us, many things, such as writing, drawing, painting, book-keeping, gardening, bicycle riding, working with a lathe, playing the violin, and much other work and pleasurable employment can, with a little patience and practice, be accomplished, and thus the artificial appliance becomes in the course of a short time not merely an ornamental member, but a most useful and reliable substitute.

With regard to Artificial Legs and Feet, a patient requiring these accessories should adopt such as are constructed on principles most closely allied to nature; those in fact which are second only in all their movements to Nature itself. With the natural leg, the roughness of the roads or walking up, or sideways, on inclines, makes no appreciable difference, the

articulations of the foot accommodating itself naturally to the inclined on uneven surface.

Now this is precisely what an artificial substitute should do, for unless the joints of the artificial articulate in the same manner as the natural leg, the wearer cannot walk naturally. In bringing our Artificial Legs to their present state of perfection, the natural leg and foot in all their combinations and workings have been carefully studied and imitated; and the result is that we have succeeded in producing limbs which in appearance and anatomical mechanism, are counterparts in all their movements of the natural limb.

Probably nothing can be more irritating, or worse for the nervous system of the wearer, than an ill-fitting, badly constructed artificial leg, which makes its presence obtrusively prominent, and precludes the possibility of walking naturally, or even sitting with any degree of comfort. Further, if such a limb is devoid of the lateral, or side motion, it is almost impossible, except with the greatest discomfort, to get about unless on a level surface. Our Patent Ankle Joint, which in addition to the backward and forward movements, has the lateral or side motions, obviates this, and produces motions which are the same as the articulations of the Tibia and Fibula, with the Astragalus, in the human leg and foot.

Another simple but great improvement in below knee legs is our patent adjustable knee joint with conical bearings; the object being, to give about three times the wearing surface beyond those of general construction. The wearer, by means of a key, is able to tighten the joints should they become a little loose, and thus prevent them becoming noisy and making the irritating "click" so frequently heard in ordinary Artificial Legs. Wearers of these last mentioned appliances suffer considerably in their general health from want of a sufficient amount of bodily exercise, and through being precluded

altogether from such health giving pastimes as horse-riding, cycling, etc., etc. A person wearing an Artificial Leg of our construction can, not only walk a long distance in perfect comfort, but can ride a horse or bicycle, and can rink and skate with as much safety as he did prior to losing his limb. We have patients who ride bicycles and tricycles 40, 60 and even 80 miles and upwards a day ; which is an utter impossibility for any person wearing an Artificial Limb of the ordinary make.

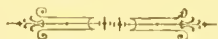
There are thousands of unfortunate individuals wearing substitutes for lost limbs, who are totally unaware of the comfort that can be obtained from the use of appliances such as we alone manufacture. And here we would respectfully ask our readers who may have any doubt whatever as to the statements here made, to peruse copies of a few testimonials received from patients, inserted at the end of this pamphlet, who, before coming to us, were victims of extraordinary productions unworthy to be termed "Artificial Legs," and whose original letters can be seen on application at our office.

In conclusion, we invite the Medical Profession generally, and all, whether rich or poor, who require substitutes for lost limbs, to call and inspect full sized models of the appliances we manufacture and have them thoroughly explained, before deciding what particular make or kind they adopt. At the same time we will produce for comparison with our own Artificial Limbs, those of other makers (amongst others some of the much advertised "*Anglesey Legs*,") which have been left with us, because the persons for whom they were made were totally unable to wear them, and we have not the remotest doubt of what the verdict will be.

Forms for measurement are furnished on application, but in every case, where possible, we strongly advise patients to come to us to be measured, fitted, and where necessary a cast of the injured limb taken ; so as to avoid mistakes which cause both annoyance and trouble.

OBSERVATIONS ON AMPUTATIONS,

FROM AN ARTIFICIAL LIMB MAKER'S POINT OF VIEW.



The most suitable points at which amputation should be performed so as to enable a person to wear an Artificial Limb (whether a Leg or an Arm), with comfort and utility are not always known or considered by Surgeons, who are often not altogether cognisant of the mechanism of these substitutes, and there is a prevailing idea that in removing a portion of a Limb, "the less taken off, the better it will be for the unfortunate sufferer." Such, however, is not always the case, and we would most respectfully desire to point out the most favourable places of amputation.

1.—AMPUTATION OF THE FOOT.

A foot is frequently removed by what is known as "Symes" amputation, by which the foot is taken off at the Ankle joint. In cases of DOUBLE AMPUTATION this is a good place to remove the feet ; but where one foot only is removed, it is the better plan to take it off midway between the knee and the ankle. A portion of a foot is perfectly useless to the patient as it can never be used with comfort in conjunction with an Artificial substitute.

2.—BELOW KNEE AMPUTATIONS.

These we suggest should be performed at from 4 to 6 inches below the patella. A stump of five (5) inches affords the wearer of an Artificial Leg all the power required to swing the leg, and leaves sufficient room wherein to place the proper mechanism in the socket. We frequently have cases where the stump is

from 8 to 10 inches long, and they are invariably very difficult to fit with an artificial appliance, owing to the extreme attenuation and sensitiveness at the end.

3.—AMPUTATION THROUGH THE KNEE JOINT.

This is the WORST OF ALL from a Limb Maker's point of view, as the wearer of an Artificial substitute must take the bearing on the condyles ; which, being covered by only a thin layer of muscle and skin, soon cause sores and ulcers to form by the pressure of the bone on the pad of the leg, unless the utmost care is used, and few persons can walk naturally with a knee bearing leg. Therefore where a knee has to be sacrificed, the amputation should, if possible, be performed about four (4) inches above the knee joint.

4.—AMPUTATION ABOVE THE KNEE.

This is naturally the most serious, as the patient is deprived of his knee joint, hence it is of the utmost importance where practicable to amputate the limb at a point about four (4) inches above the condyles.

5.—AMPUTATION OF THE HAND.

A portion of an injured hand should never be left as it is perfectly useless to the patient, and little can be done with it by the Limb Maker. Amputation at the wrist is also very unsatisfactory as it leaves an unnecessarily long stump. When the hand has to be removed, the amputation should be about the middle of the Fore-arm ; we can then make an artificial hand which will be of real service to the wearer.

6.—AMPUTATION OF THE ARM.

When the joint of the arm has to be sacrificed, the most suitable place of amputation is the middle of the upper arm.

PATENT ADJUSTABLE KNEE-JOINT WITH CONICAL BEARINGS,

FIG. 1.

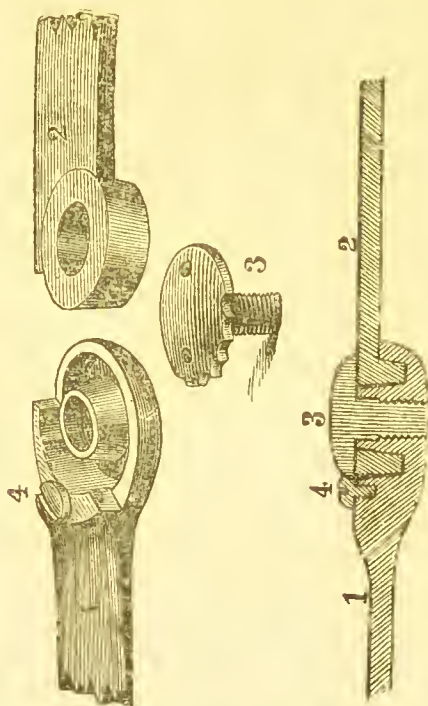


FIG. A.

FIG. B.

These cuts represent our patent knee-joints, having about three times the amount of bearing surface beyond those of ordinary construction. No. 1 is attached to the leg. No. 2 is held by the leather socket above the knee. No. 3 is a strong screw, for holding Nos. 1 and 2 together and forms the means of adjustment in case of wear. No. 4 is the set screw for preventing the large screw, No. 3 becoming loose.

Fig. B is a sectional view of a medium sized joint. Patients who have worn legs with joints which become loose and noisy, will realize at once the great advantage of this perfect and adjustable joint.

DESCRIPTION OF PATENTED ANKLE-JOINTS WITH AND WITHOUT LATERAL MOTION.

FIG. 2.

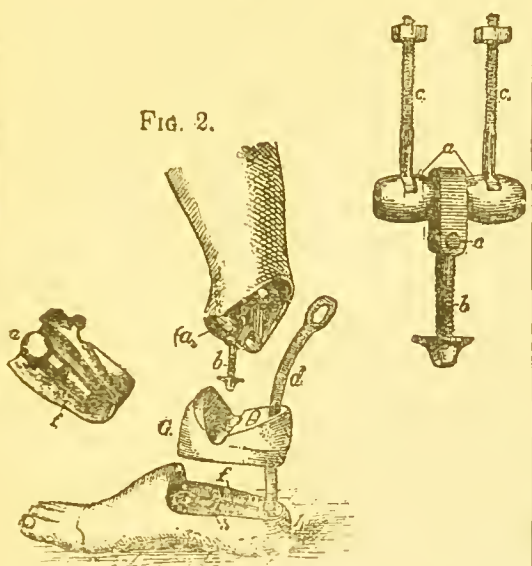


FIG. 2 shows construction of universal ankle-joint.

A. Ankle-joint articulates in block G.

B. Bolt securing foot to leg.

The extra block, G, is for shewing the lateral articular bearings F, F.

FIG. 3.



FIG. 3 shows construction of single ankle-joint.

A. Ankle-joint articulates on foot.

B. Bolt securing foot to leg.

The cord D is attached the same in both styles.

What we particularly wish to point out in the above cuts, are the following claims to originality:—Claim 1: The semi-circle bearing F under block G, with ball shaped end, and bushing for same in foot. Claim 2: These bearings force them to wear directly to the centre, which makes the adjustment perfect, and prevents any displacement whatever from wear. Claims 3 and 4 refer to the jointed bolt B, with pivot C and heel tendon D.

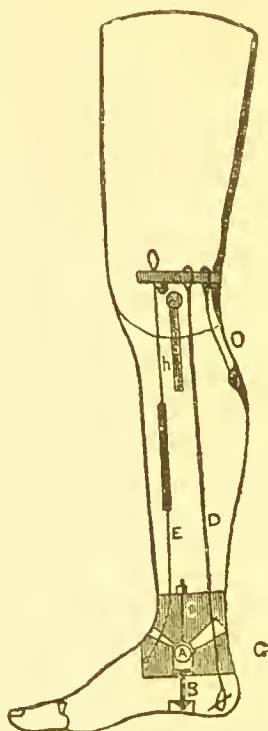
DESCRIPTION OF FULL LENGTH LEG.

FIG. 4.

The articular surfaces of the joints are steel bolts working in smooth leather sockets. The knee joint consists of steel brace joints H rivetted firmly to each side of the lower leg ; the upper ends being hollow, articulate in sockets at each side of the knee, and are easily adjusted in case of wear. The hollow bolt A forms the ankle joint attached to the leg by two steel bolts C, making a thoroughly reliable joint. It articulates the block G, admitting of motions the same as the Tibia and Fibula with the Astragalus in the natural leg. The block G forms the upper part of the foot and produces the side or lateral motion, rolling in the same manner and effect as the astragalus ; its articular surface underneath is at the centre of the block and foot, and is semi-circular in form.

The joints have greater bearing surfaces ; are stronger and more reliable than those of any other construction. They are absolutely life-like, moving with the greatest ease and elasticity. The heel cord D (a substitute for the tendon Achilles) controls the forward motion, and retains the elevation of the body on the ball of the foot when walking. The spring E is connected at the knee and block G and acts as foot and knee spring.

FIG. 4.

SECTIONAL VIEW OF
FULL LENGTH LEG.

FULL LENGTH LEG (Fig. 5) WITH LATERAL ANKLE MOTION, USING THE CUP AND BALL ANKLE-JOINT.

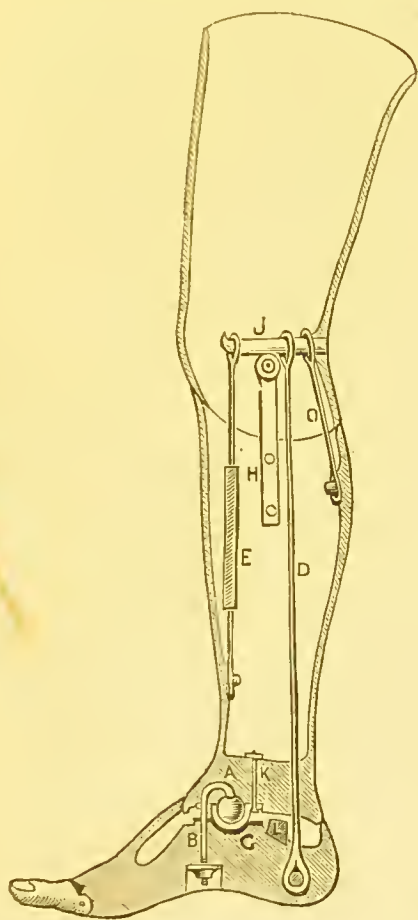


FIG. 5.

The advantages of this leg over others of ordinary construction, are as follows :

Great simplicity, life-like movement, and ease of adjustment in case of wear.

Fig. 5 is a section of the leg when put together. The knee-joint is the same as that previously described.

the great difference being in the ankle-joint, the construction of which is clearly shown below in fig. 6. The cup-plate A, which is securely fastened to the leg by means of the screw K, works in the leather covered joint G, in the centre of the foot, and is kept firmly held against the cup-plate A by means of the ball-screw B, the ball C working in A. The side motion of the ankle is regulated by means of strong springs fitted on either side of the ball-joint F F, and by the use of a rubber buffer L, the forward motion, (controlled by the heel cord D) is the same as described in fig. 4.

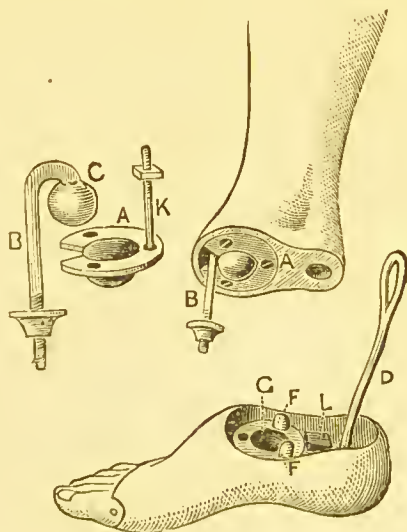


FIG. 6.

LEG FOR THIGH
AMPUTATION.

FIG. 7.

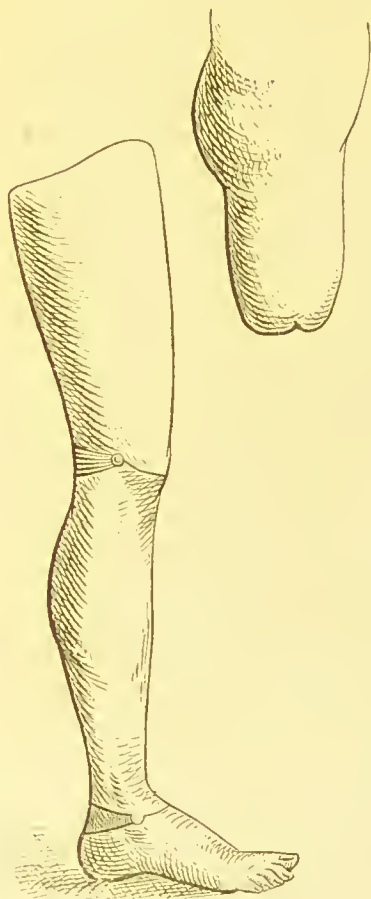
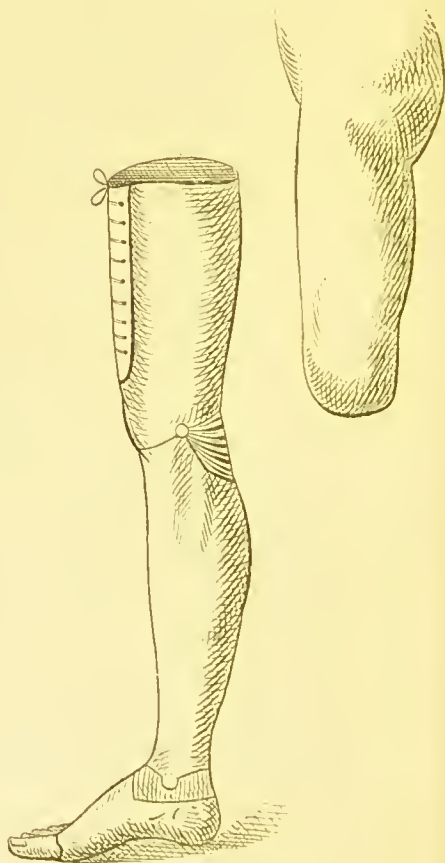


Fig. 7 represents a full length leg, such as is required for a thigh amputation at any point between the hip and knee-joints. The top or socket of the leg is perfectly fitted to the shape of the stump. The leg is held firmly in its position either by means of straps passing over the shoulders, or by means of a belt, which has a running cord attached to the top of the socket. The latter we strongly recommend.

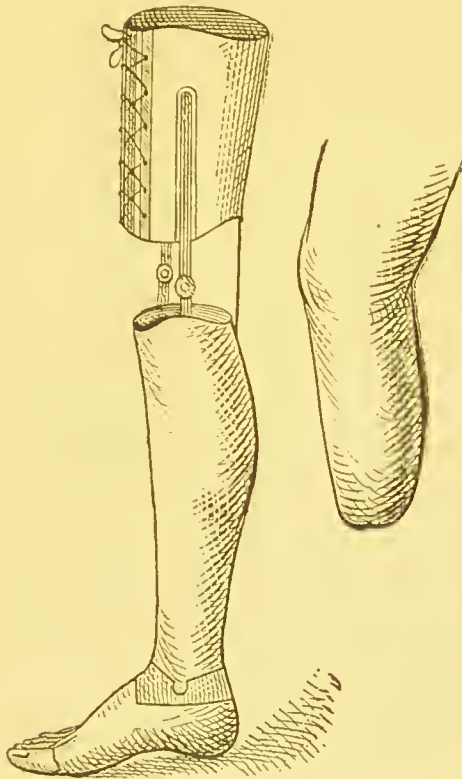
Fig. 8 is the leg we make when the amputation is at the knee-joint, or at the upper third of the lower leg, leaving the stump so short that it cannot be used. The entire bearing in the latter case is taken on the knee. The socket of this leg does not extend up to the body, being made open in front and secured by means of lacing. In most cases a strap over the shoulders is necessary.

FIG. 8.



LEG FOR AMPUTATION
AT KNEE-JOINT.

FIG. 9.



LEG FOR AMPUTATION BELOW THE KNEE.

Fig. 9 shews an artificial leg which we supply in cases where amputation has taken place at any point between the knee and ankle-joint. It is not necessary in all cases to attach side or knee-joints. Where the stump is in a good healthy condition, and from 8 to 10 inches long, it is sufficient in many cases to take all the weight of the patient, and with the elastic heel-cord and universal ankle-joint it can be used with great comfort and safety. Where however, the patient has a laborious amount of walking or standing, it is far preferable to have the thigh support, which affords great relief to the stump.

Fig. 10 represents an artificial leg applied to a stump, where the amputation has been performed after what is known as the Syme's amputation, and is similar to what is known as Pirogoff's amputation. In either of these cases the bearing is almost entirely taken on the end of the stump; should however the end be at all sensitive, the greater part of the bearing can be taken at the sides and upper part of the socket, the same as if amputated above the ankle-joint.

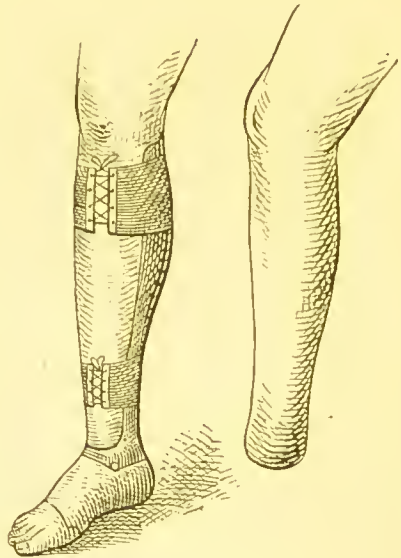


FIG. 10.

In Fig. 11 we have an artificial foot applied to a stump known as Chopart's amputation. This is a most unsatisfactory stump, both for the patient and artificial limb maker. In many cases an artificial foot can be applied very successfully without side braces and attachments about the ankle. It depends entirely on the condition of the stump and the power the patient has over the ankle joint.

A person can walk moderately well wearing an ordinary shoe with a very strong steel insole, extending the full length of the foot, to retain the proper shape of the shoe.

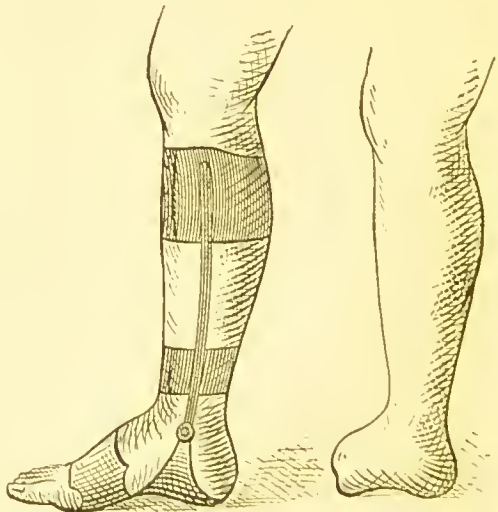


FIG. 11.—FOOT APPLIED TO CHOPART'S AMPUTATION.

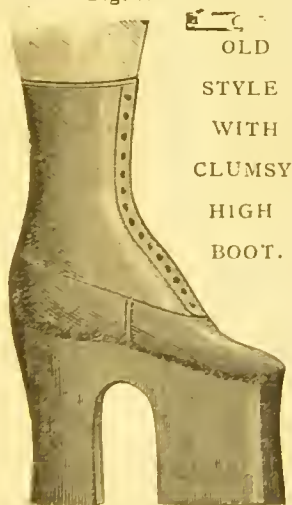
EXTENSIONS AND APPLIANCES FOR SHORTENED AND DEFORMED LIMBS.

In treating cases of shortened or deformed limbs, our appliances vary according to the length and condition of the limb. No two cases are alike; it, therefore, requires special attention to obtain the correct elevation and most natural bearings. An artificial appliance must be attached to such part of the limb as is able to control it, and the same applies to any apparatus adopted in cases of deformity.

Fig. 12 illustrates the appliance most commonly adopted by those who have one leg shorter than the other, and simply consists of an ordinary boot with a sole of greater or less thickness, according to the shortness of the leg. This sole is made of cork, covered with leather, and is at once unsightly, unnatural and uncomfortable.

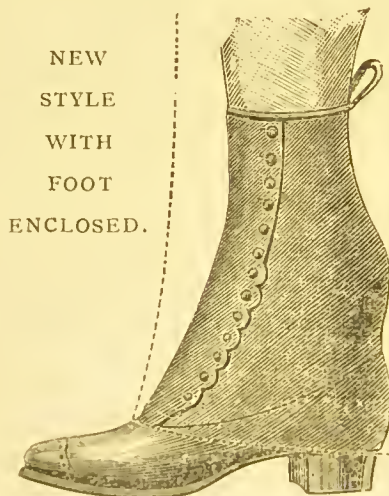
Fig. 13 illustrates our Patent Extension Foot for a shortened leg, and explains itself. We make an artificial foot with articulations at the toe joint, exactly the same size and shape as the other foot. On this the foot of the deformed limb rests, and when the boot is fastened, and the trouser or skirt in position, the deformity is not perceptible, as both feet are alike in appearance. A person can also walk more naturally and with greater comfort than on the hideous high-soled boot.

Fig. 12



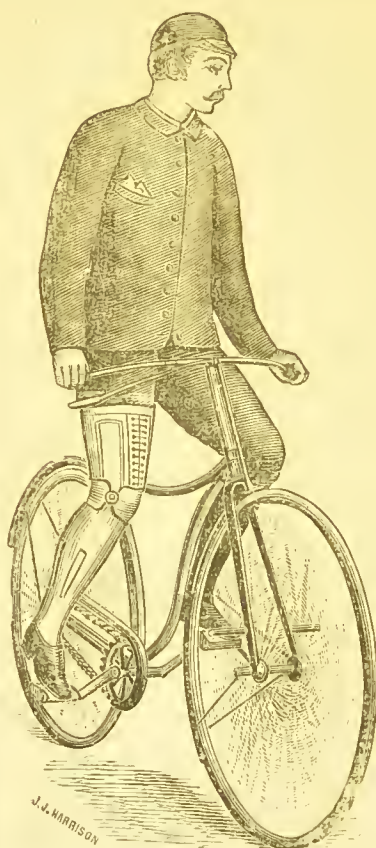
OLD
STYLE
WITH
CLUMSY
HIGH
BOOT.

Fig. 13



NEW
STYLE
WITH
FOOT
ENCLOSED.

The
only
Artificial
Limbs
made
which
enable
Ladies
and
Gentlemen
to enjoy
the
health
giving
pleasure
and
pastime
of
CYCLING.



The
construc-
tion of our
toe-joint
allows full
pressure
to be
exerted
on the
pedal of a
cycle, or
the stirrup
iron of
a saddle,
and
enables a
person
to walk
up stairs
in the usual
manner
stepping
with the
toes.

The above is a Picture of one of Messrs.
FERRIS' Patients, who states that he can Cycle
40 miles any afternoon. His letter to this effect
can be seen at our Office.

❧❧❧ ARTIFICIAL ARMS. ❧❧❧

The artificial arms of our manufacture are so simple in construction that it will not be necessary to give a very detailed description of them. The elbow, wrist and finger-joints are moveable, and can be used to great perfection in handling light articles. The frames of these arms are a mere shell, made of carefully selected willow, hollowed to fit the stumps. The artificial is modelled to the shape and size of the natural arm. It is then covered with a thick skin, for strengthening purposes, and, after being enamelled a flesh color, weighs about $1\frac{1}{2}$ lbs. for a full length arm.

We do not wish the reader to anticipate that these arms can be used to great advantage in all kinds of work, for the hand and fingers can only be used in very light operations; but for persons who follow heavy work, farming, etc., they are made so that the hand can be detached, and a hook, ring, or any instrument suitable to the wearer's business attached; the hand being kept neat and clean for dress purposes.

FIG. 14

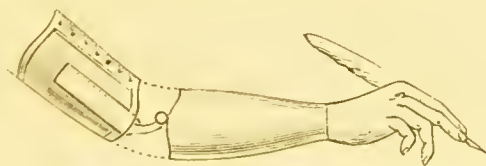


Fig. 14 represents an arm for amputation between the wrist and elbow joints. It is attached by lacing above the elbow; and a single strap with loop under the opposite arm and over the shoulder, to which is attached the hand opening cord.

FIG. 15

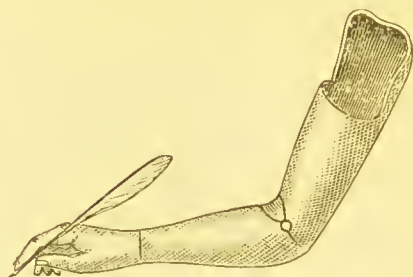


Fig. 15 represents an arm for amputation between the shoulder and elbow joints. It is attached to the body by light web straps, which cross the back, pass under the opposite shoulder, and back to the buckles on the artificial arm. The buckle at the back is for elevating or flexing and extending the lower arm; the operation being a slight forward movement of the stump, by means of which the elbow-joint is controlled in a very graceful manner; the arm can be raised at any angle to suit the user. The only mechanism in the arm consists of two cords and a spring, making it the most simply constructed and effective of any artificial arm made.

The elbow joint in a full length arm, is arranged in such a way that it can be secured at right angles, so that a basket may be placed on it, or a weight of 30 or 40 lbs. carried with ease, the weight being supported from the top of the shoulder.

To a steel socket, which is placed in the hand, can be attached a knife, or fork when eating; or a brush for hair dressing, etc. These articles, if desired, are furnished with the arms, and their services can only be fully appreciated by those who use them.

Artificial arms are divided into two classes, the difference being principally in the finger movements. In the second class the fingers are all stationary, the opening power being attached only to the thumb; but it can be used in the same manner, and to nearly the same advantage as in the first-class arm, but it is not so perfect an imitation of nature.

TESTIMONIALS.

ACADEMY OF MUSIC,
79, Mildmay Park, N.
20th February, 1892.

MESSRS. J. & E. FERRIS.

DEAR SIRS :—The Artificial Leg you made me some sixteen months ago, is the fourth I have had since my thigh was amputated and I am pleased to say that it gives me every satisfaction, and surpasses *by far all the others*. The first day I had it I walked home from your house, and have not had another on since. It is *so comfortable* that I never think about the loss of the natural limb.

You may like to know that *I can and do jump in and out of Cars, 'Busses, etc. whilst in motion*. I walk for miles without a stick, make my way through a crowd, and dodge traffic in the streets without any inconvenience.

I am, Dear Sirs, yours truly,

F. BOWEN.

P S.—Although the snow is on the ground and the pavements have been slippery for the last week, I have been out as usual, for I feel as safe on my feet as any one and never fall down.—F.B.

1, Spenser Road, South Hornsey,
19th February, 1892.

DEAR SIRS :—Having worn the Leg you supplied me with about 12 months I am glad to say it is the most comfortable Artificial Leg I ever had. The patent Ankle Action I find of great use on uneven surfaces.

My health, too, has been much better, as I am able to take more exercise than formerly *especially cycling, which I have only been able to take up since wearing your leg*, and I can now ride 40 miles any Saturday afternoon. The Braces you fitted I find of great benefit, and I shall have great pleasure in recommending your Artificial Limbs, as I consider them the best and most durable I have known.

I remain, Yours truly,

G. O'BORN.

MESSRS. J. & E. FERRIS, etc., etc.,

Leamington, 26th March, 1892.

DEAR SIRS :—I cannot express to you how thoroughly pleased and gratified I am with the Leg you made for me. My friends, too, are simply charmed, for it enables me to join them "*as of yore*" in their Cycling tours through the country, which I found it impossible to do

with the legs I had from two other (deemed to be the best) London Makers. Besides that, the ease and comfort is so much greater than anything I have before experienced that I have no hesitation in saying they "*beat the record*." 100 miles a day on a Safety Bicycle wearing a wooden leg is not bad work. I state it as a fact that I sometimes forget I am wearing an Artificial Limb.

Yours most gratefully,
G. W. S——e.

MESSRS J. & E. FERRIS, etc.

Commercial Street, Maesteg, Glamorganshire.
23rd February, 1892.

TO MESSRS J. & E. FERRIS.

DEAR SIRS :—I am very glad to testify that the Leg you made is much superior to the one I had before. *There is no comparison between the two.* My walk is much more natural now than when I used the other. Your patent Ankle joint is a great improvement, the tendon action is more perfect, especially the springs, which is in the other Leg are not in use in your Leg. I am very pleased with the Leg you made and quite satisfied, and would advise all in the same unfortunate state as I am to try your make.

Yours faithfully,
PAUL H. WATKINS.

Dundley Hill, Bradford, Yorks.
18th February, 1892.

TO MESSRS J. & E. FERRIS.

DEAR SIRS :—In reply to your letter, I have now been using one of your Artificial Limbs for the past year, I find it *much superior in every way* to the one I had previously used by ———, a London Maker. I walk better and can confidently recommend them to any one requiring an artificial limb.

The only thing I am disappointed in, is, that I have not very much power over the knee joint in consequence of the stump being so short (only three inches), but as far as the leg is concerned, *it gives me every satisfaction.*

Yours truly,
M. AXTELL.

Leicestershire.
23rd February, 1892.

DEAR SIRS :—In reply to yours of the 16th instant, I am perfectly satisfied with the Leg you have supplied me with. It is quite comfortable and I can walk long distances without the least discomfort. The

movements are most natural and life-like, giving great ease in walking, *and is not to be compared with the old style of Leg you saw me wearing.*

I shall be very pleased to recommend your firm as opportunity offers, but must ask you not to publish either my name or address.

Yours faithfully,
W.S.

Old Lodbury, Gloucestershire.

18th February, 1892.

DEAR SIRs :—In answer to your letter, I am glad to say I am getting on capitally with my Artificial Leg, very much better than my friends expected in so short a time, as I am rather delicate. For the first fortnight I wore it only a little each day, but since then I have been wearing it constantly and it does not hurt me in the least. *My opinion of the Leg is that it is just perfect.*

Believe me, Yours etc,
(Miss) KATE GODWIN.

MESSRS. J. & E. FERRIS.

48, Gt. Russell St., London. W.C.

The ARCHITECTURAL METAL WORKS,
1 & 2 Castle Street, Long Acre, London, W.C.
1st March, 1892.

MESSRS. J. & E. FERRIS.

Gentlemen :—It is now seven months since you made me a mechanical leg, and I have had it in constant use ever since. *It has given me the greatest satisfaction*, and has surprised everyone who has seen me getting about again almost as well as ever.

I have seen most of the legs by other makers, and thoroughly understanding all kinds of mechanical appliances, they gave me no inducement to order one. I could not see that they would give anything but trouble and pain, therefore I have no hesitation in saying that I consider *yours the best anyone could have*, and I shall be only too pleased, out of gratefulness, to answer any enquiry or see anyone in the unfortunate position of requiring a mechanical limb.

Yours truly,
WILLIAM SHRIVELL.

12, Francis Street, Blackburn.

13th March, 1892.

MESSRS. FERRIS.

DEAR SIRs :—I beg to acknowledge the wonderful advantage I have derived from the use of the Artificial Foot. I have *not been able to*

walk so well for the last five years. It seems as if I had *my own foot back again.*

Many thanks to you for your kind attention in fulfilling the measurements and making it so perfect.

Yours faithfully,
ANNIE PHELAN.

Union Club, Trafalgar Square.
18th February, 1892.

Gentlemen :—You ask me for my candid opinion of the two full length Artificial Legs with which you supplied me. Well, after having worn one of them nearly 9 months (the other being still in reserve), I can only say it is a real gem, and more than answers my expectations.

I have, as I told you, some Artificial Legs, the best I could get, for upwards of 34 years, made not only by the best Makers in London and Provincial Towns, but also in Paris, Berlin, and Vienna; but I am bound to give you credit for making a Leg which has given me *far more ease and comfort than I ever experienced.* and with which, owing to absence of noise, and the perfect action of the ankle joint and automatic movement, I can walk better and safer than I ever did since I had the misfortune to lose my leg.

You are at perfect liberty to publish this in your new Book, but not my name, which for many reasons I must ask may be withheld. Card enclosed.

Believe me to be,
Yours most thankfully and gratefully,
W. M. C.

MESSRS. J. & E. FERRIS.
48, Gt. Russell Street.

Waterbeach, Goodwood, Chichester.
15th April, 1892.

DEAR SIRs :—I just write you a line to tell you how I am getting on with my Artificial Leg. I can ride a horse as well as ever, and can put my left foot in the iron and mount without any difficulty, and you know the left is my Artificial Foot. I go hunting two and three days a week and I find no difficulty in riding over a five-barred gate. I also ride a tricycle and can walk four miles an hour, and no one could detect that I was wearing an Artificial Leg.

Yours truly, H. SCARRATT.

North Pallant, Chichester.
March 31st, 1892.

TO MESSRS. FERRIS.

The Artificial Leg you made for my patient* has answered exceedingly well. He can walk four miles in the hour, and can ride (a horse) over a fence as well as he could before.

The Artificial is not to be distinguished from the natural extremity whilst walking.

Yours very truly,
(* H. SCARRATT referred to above). A. S. BOSTOCK, M.R.C.S.

Portland, 23rd March, 1892.

DEAR SIRs :—I should have written earlier, but I have waited to see if there was anything particular to say about the *Extension Foot*. I am very pleased with it, and shall feel quite at home with it in a short time; the different position of the foot necessarily needs time to get accustomed to it. I will call on my next visit to town and get you to make a slight alteration in the surface on which the natural foot rests, the outside edge of the waist is too abruptly ridged. At present, although it is quite bearable, the plant or surface of my foot overlaps the ridge at this point.

Yours truly,
A. B. C. L.R.C.S.

Leeds, 20th October, 1891.

Messrs. FERRIS & Co.

To say I am pleased with the Artificial Leg you made for me, would be in my opinion, "damning with faint praise." I am more than pleased, in fact I am simply delighted. I don't want to see the Anglesey Leg I left with you, again. You are perfectly welcome to it if it is of the slightest use to you.

Yours very faithfully,
R. ANDERSON.

Gloucester, April 3rd, 1889.

DEAR SIRs :—I have now been using one of your artificial legs for the last eighteen months, and can fully testify to the comfort and ease with which I can walk with it. *The lateral motion* I find of the greatest benefit, as I can walk on uneven surfaces with nearly the same confidence as before my accident. I also find great advantage in the knee-joint having such a large bearing surface, and the way in which I can take up pressure on the knee greatly facilitates walking. *I use my tricycle* now very often and find it a great boon, as I can get about nearly as well as ever on it.

I have tried another leg by a leading London maker, but much prefer yours, and can confidently recommend it to any one who, like myself, may have the misfortune to require one, and give it as my opinion such limbs are a benefaction to all unfortunate cripples.

Believe me, yours faithfully,
(Signed) WILLIAM STOUT.
(Ex-Amateur Champion Sculler.)

Brighton, September 10th, 1889.

In the year 1884 I had the misfortune to lose my leg. The operation was performed by Sir Joseph Lister, bart., and was most successful.

Since then I have had two artificial legs, made by one who is considered the best leg maker in London, but I have had very little comfort in wearing his legs. A few months ago I was persuaded to have a leg made

by you, and I am only too thankful to be able to state that I wear the same with great comfort to myself. I walk much better, feel much more secure with it in use, and am, in every respect, much pleased with it, and can thoroughly recommend any one requiring an artificial limb to procure one similar to my own. I enclose my card and remain,

Yours sincerely,

London, W.C., 16th September, 1889.

Dear Sirs :—It is just a year since I saw one of your artificial legs, and at once noticed the superiority of the same above any I had previously seen.

I, as you know, at once gave you an order, and it is with great pleasure that I am writing to express to you my entire satisfaction, for after giving the limb a fair, if not severe trial, I found it a splendid substitute for my own, and it by far exceeds my expectations. I may add that I am on my feet most of the day, walking on an average, six miles every evening after leaving business, and *I never feel the fatigue I used to on my previous artificial limbs*, in fact I am often surprised at my own accomplishments. With regard to wounds on the stump, caused by the friction of the limb made by other makers, your leg is such a perfect fit that I have not had a single wound to inconvenience me since the day I first wore it.

In conclusion I should like to say that if at any time you have any clients who would like to test the truth of my statements, and see what really can be done on one of your artificial legs, I shall be very pleased to give them an interview.

Yours truly,
G. T. S.

CASE OF DOUBLE AMPUTATION.

9th October, 1890.

DEAR SIRS :—With reference to the pair of artificial feet which you made for me in August last, I write to express my entire satisfaction with them. They are such a great improvement on those I used to wear, that directly I got them, I felt I had at last succeeded in getting something I could walk with in comfort. The feet are light, well-made and have quite a natural appearance. The action in walking is perfect, second only to nature. I quite agree with you that no one would for a moment suppose I had lost both my feet. I can stand alone without any fear of falling, and can walk without the aid of even a stick. My friends are all astonished at my walking so well and delighted at the improvement. As to wounds forming through friction caused by the sockets not fitting properly, I find they fit so perfectly that it is impossible for any friction to take place. In conclusion, I shall be most happy to give any

information to intending purchasers of your artificial limbs, and if they are not satisfied with the article you make them they must be very hard to please. Thanking you for the courtesy and kind attention you have given my case. I enclose my card, and remain,

Yours truly,
J. H. C.

NOTE.—See also on page 25, extract from an Article on Artificial Limbs, published in the "FAMILY DOCTOR," August 16th, 1890.

94, Piccadilly, London, W.

5th March, 1891.

GENTLEMEN :—I have much pleasure in testifying to the comfort I have received from wearing the Artificial Leg and Belt made by your firm. *I have worn one of yours now for the last two years, and it has given me every satisfaction.*

Yours faithfully,
G. E. K. B.

Bradford, 11th January, 1892.

DEAR SIR :—It affords me much pleasure to tell you that the Artificial Leg you made for my Patient, Mrs. S. Robinson simply from measurements, and even without trying it on, is a perfect fit, and already she walks naturally and comfortably with it, which, considering she has only had it a week, is in my opinion marvellous.

After seven and twenty years experience with Artificial Limbs and Appliances, I must in justice to you, state that in appearance and mechanism it is without any exception, the finest and most perfect Limb I ever saw.

Would or could you let me see a sample of one of your very best productions? I should much like to shew one to a Patient of mine.

Yours very truly,
M.D., M.R.C.S.E.

MESSRS. FERRIS,
48, Gt. Russell Street, London,

Petersburgh, Russia.

30th December, 1891.

DEAR SIR :—The Leg you made for me is a wonderful piece of mechanism. It is most comfortable and fits beautifully, which is something astonishing, considering it was never fitted on. That it was made to the measurements supplied I have no doubt, but I think I should have liked it even better if it was a trifle shorter. Perhaps my stump will shrink into it. Everyone who has seen it is greatly surprised. I

can walk most comfortably with it, and people who know me, and they are not a few, positively wonder at the facile way in which I get about. Kindly proceed to make me another on the same lines, in case of an accident, for I would not be without one on any account.

Yours most truly and thankfully,
C. J. P.—ski.

Avenue de l'Opera, Paris.

18th January, 1892.

GENTLEMEN :—I am greatly pleased with the Artificial Leg you made for me. In justice to you I am bound to say that having worn these appliances for 17 years, I never knew, until I got your substitute, the comfort, the ease, the safety, that could be obtained from the use of an Artificial Limb.

Accept &c.,
AUGUST JULLIEN.

Fletcher House, Tottenham, N.

2nd May, 1892.

MESSRS J. & E. FERRIS.

GENTLEMEN :—The Leg you have made for my Patient is excellent in all respects, and she and all her friends are much pleased with it. The case I know is a difficult one for you to deal with as an amputation right through the knee joint does not make such a good stump as one above or below, but Mrs. P—— finds her leg fit most perfectly. The universal movements of the joints reflect the greatest credit on your skill and ingenuity, and I shall at all times be very pleased to recommend your artificial limbs.

Yours truly,
OCTAVIUS M. WHITE.
M.R.C.S., Eng., M. & L.S.A. London.

ARMS.

143, Count Hill Road, Watersheddings,

Oldham, 17th February, 1892.

GENTLEMEN .—In reply to your enquiry, allow me to state that the Arm you made for me gives me satisfaction, and on no account would I like to be without it. It looks very natural and cannot be detected from my other by strangers.

I remain, yours faithfully,
(Mrs.) H. JONES.

Manchester, 22nd February, 1892.

DEAR SIRs :—I have much pleasure in telling you that the Arm you made for me is *a very great success*, and although I have only worn it between 4 and 5 months, I can do many things with it I never expected

I should ever be able to do. It is a vast improvement on those I have previously worn, and my very best thanks are due to you for your great courtesy and kindness.

Believe me,
Yours very gratefully,
C. J. T—— n.

Wine Street, Bristol.
29th February, 1892.

MESSRS. J. & E. FERRIS.

GENTLEMEN :—The Arm you made for me in May last has, I am very pleased to tell you, proved a good substitute for the original which I lost by an accident just about a year ago. I can write and draw with the hand, work in the garden, guide my bicycle, play Bagatelle, in point of fact do lots of things I never contemplated or supposed I should ever be able to carry out, notwithstanding your assurances to this effect when being measured. Other friends and acquaintances of mine similarly circumstanced have not half the pleasure or use of their Artificial Arms as I have, and they know it. They tell me they shall come and see you the next time they want one.

Yours very truly,
G. A——s.

I, Michael Street, Wexford.
11th April, 1892.

DEAR SIR:—It gives me great pleasure to inform you that the Artificial Arm is giving me every satisfaction, indeed I must say I feel altogether a new man since I began to wear it. My friends are delighted that I have procured such a serviceable article, and seem surprised when they saw me write, and take up or drop the pen or pencil.

I can strongly recommend any person requiring an Artificial Arm to apply to you and I am sure they will be as delighted with theirs as I am with mine. Thanking you for your trouble.

I am, dear sirs,
Yours faithfully,
J. M. LEARY.

(Late Light-house Keeper, Tuskar Light-house, S.E. Coast of Ireland).

Melton Mowbray,
11th October, 1889.

GENTLEMEN :—With reference to the Arm you made for me, I am glad to say it has given me every satisfaction. In fact, it has surpassed my own expectations, both in its quality and strength. It has really made a new man of me. *The first time I had it on* I took a lead pencil and wrote my name in a good legible hand—a surprise to those that saw it, in fact, many disbelieved it till they saw me write, and all they could

exclaim was, "what will they get things to next?" I have now a violin, and have made good progress, holding the bow with my artificial hand. I rode a bicycle for years before I lost my arm, but a friend of mine bought a safety bicycle, and I asked him to let me try it, at which he laughed and said I should not be able to guide it, however, I got on and rode it, and am open to ride forty miles any day.

Having worn your arm for two years, *I can with confidence recommend them as the very best I have ever seen or heard of.*

Yours respectfully,
WILLIAM LEADER.

EXTENSIONS FOR SHORTENED AND DEFORMED LIMBS.

—near Gloucester,
February, 1891.

(2½-inch Extension.)

Gentlemen—The station master here gave me one of your illustrated pamphlets, and called my attention to what appeared to me to be such an appliance as would exactly suit my son, a young man of 19 years of age, whose left leg was some 2½ inches shorter than the right leg.

The extension you made for him turned out a most unqualified success, and was so hidden, as to cause his friends and acquaintances to wonder how his leg acquired in such a short time its additional length.

I feel I cannot sufficiently thank you for the extreme care you took in the matter; the result achieved being something surprising.

With many thanks for your courtesy and kindness, believe me to remain,
Very faithfully yours,

M.A.S.—s,

MESSRS J. & E. FERRIS,
43, Gt. Russell Street, London.

Newport, 2nd June, 1891.

(3½-inch Extension.)

Mr.—presents his compliments to Messrs Ferris and is greatly pleased to say that the Extension Foot they made for him is most comfortable, hides the deformity, and is altogether a great success.

MESSRS. FERRIS, London.

—Lincolnshire, 29 October, 1891.

(4½-inch Extension.)

DEAR SIRs, I am pleased to say the Extension Foot you made for me is an excellent fit, is most comfortable, completely conceals the deformity, and the relief and comfort afforded as compared with the old high-soled boot is unknown.

Yours truly and gratefully,
C.R.N.

MESSRS. FERRIS, etc., etc.

—Bradford,
2nd March, 1892.

(2 inch Extension).

Mrs. R———n begs to acknowledge the receipt of Messrs. Ferris's letter, and to inform them that the Extension Foot they supplied in January last, is the source of the greatest comfort to her, and fits admirably.

MESSRS. J. & E. FERRIS,
48, Gt. Russell Street, London.

28th November, 1891.

(5 inch Extension).

DEAR SIRs, The Extension Foot you supplied me with is a great success. I do not think I need say more. Card enclosed,

Yours faithfully and thankfully,
JOHN S. B——e.

MESSRS. FERRIS.

Nr. Leicester, 10th March, 1892.

(4 inch Extension).

MESSRS. J. & E. FERRIS.

GENTLEMEN, When I called upon you very early in the present year I was suffering from active inflammation of the Hip Joint, and was as you know, using crutches.

The Extension you made for me has not only done away with the crutches but I am greatly pleased to say has relieved the hip joint so that the inflammatory symptoms have passed away, and I can now walk with ease and comfort.

Yours most gratefully and truly,
THOMAS G——.

P.S. You may publish the above, but I must ask you to withhold my name and full address.

Liverpool, 19th May.

(7-inch Extension).

Mrs. K———compliments to Messrs. J. & E. Ferris, and wishes to acknowledge the receiving of Miss K's Extension Foot and pair of boots.

She is sure Messrs. Ferris will be pleased to hear that to all appearance the same will be a complete success. Miss K. is able even with a few hours wear to walk most comfortably.

MESSRS. J. & E. FERRIS, London.

OPINIONS OF THE PRESS.

Meeting of the British Medical Association held at Birmingham, July, 1890.

*Extract from the Report of the BRITISH MEDICAL JOURNAL.
August 23rd, 1890.*

The exhibit of Messrs. J. and E. FERRIS (48, Great Russell Street, W.C.) included a full-length Artificial Leg with Patent Universal Ankle Movement, Automatic Knee Action, and Spring Toe-Joint. This leg is well constructed, and is as far superior to those of ordinary make as a natural leg is to an artificial one. A full-length Artificial Arm with Automatic Actions at the Elbow, Finger, and Thumb Joints was also exhibited by this firm. This limb is most beautifully modelled, and the simplicity of its mechanism, together with its lightness, constitute it a good specimen of what an artificial arm should be. They also exhibited a Belt for wearing with an artificial leg, so constructed that the attachments to the leg are connected by means of a running cord, which acts automatically; and when the wearer sits down, the cord, by shortening in front and lengthening behind, removes all strain and discomfort. *Also an Artificial Foot for Syme's operation. This is the most modern improvement in artificial limbs, being a foot with an artificial ankle with sub-astragalus movement.*

THE HOSPITAL GAZETTE, Sept. 13th, 1890.

By no means the least attractive exhibit in this section was that of Messrs. J. & E. FERRIS, artificial limb makers, of 48, Great Russell Street, W.C., which included a full-length artificial leg with patent universal ankle movement, automatic knee action, and spring toe-joint: an artificial arm with automatic actions at elbow, finger, and thumb-joints: a belt for wearing with an artificial leg, so constructed that the attachments to the leg are connected by means of a running cord, which acts automatically, so that when the wearer sits down, the cord, by shortening in front and lengthening behind, removes all strain and discomfort; and artificial feet and hands of very clever design and beautiful finish.

Extract from THE HOSPITAL.

A short time since, we paid a visit to Messrs. J. & E. FERRIS' rooms in Gt. Russell Street, in order to examine the artificial limbs made by them. We were greatly pleased with what we saw. The Firm by combining a number of ingenious inventions, has succeeded in making some of the most useful limbs we have inspected. The arms and legs are equally ingenious, well made, and beautifully modelled. We were much struck with the lightness of the limbs, and also their appearance. Whilst we were examining the various limbs, a gentleman came into the room, and until Mr. Ferris drew our attention to him, we did not notice any peculiarity in his walk. However, he turned out to be a client who had lost a leg just below the knee. We asked him to put his heels together, and then stoop to pick a handkerchief off the floor. This he did with great ease. We need hardly say that the test is a severe one. He told us that he had walked as much as twelve miles in a day, could ride a horse or tricycle, and that he was enabled to follow his profession, that of an architect, as well as ever he had done before he lost his limb. Messrs. FERRIS have taken three gold and thirteen silver medals, and two highest awards. This is sufficient evidence of the quality of their inventions

*REPORT OF THE ROYAL MILITARY EXHIBITION, 1890.**Extract from COURT CIRCULAR, May 24th, 1890.*

We can confidently assert that these artificial limbs are the perfection of mechanical skill applied to an accurate knowledge of anatomy, and they are as different and superior to those of ordinary makers as it is possible to conceive. That they will attract the attention of the military authorities goes without saying, for they only require to be known to be universally adopted.

Extract from THE RAILWAY SUPPLIES JOURNAL, June 7th, 1890.

The artificial limbs manufactured by Messrs. J. and E. FERRIS are marvels of ingenuity with great simplicity of construction. The sockets are made of carefully selected willow hollowed to fit the stumps. After being shaped, they are covered with skin and enamelled flesh colour. We have heard of a gentleman who applied to Messrs. FERRIS for an arm, and the first time he had it on, he wrote them a testimonial in a clear, legible hand. Gold and silver medals and the highest awards have invariably been taken by the patentees for the lightness, durability, superiority of construction, and the close imitation of nature of the artificial limbs manufactured by them. The disabled or deformed may indeed thank Messrs. FERRIS for bringing to bear upon their requirements, sympathetic consideration, perfect anatomical knowledge and mechanical genius.

FAMILY DOCTOR.

Extract from an article on Artificial Limbs, August 16th, 1890.

We are greatly indebted to Messrs. FERRIS of 48, Gt. Russell Street, W.C., for the use of the wood blocks illustrating this article, and we strongly advise any of our readers who are so unfortunate as to require artificial substitutes for lost limbs, to go to this firm, if only to see to what perfection they have brought the manufacture of artificial limbs.

TO THE EDITOR OF THE FAMILY DOCTOR.

SIR.—With reference to the illustrated article on artificial limbs which appeared in your issue of the 16th August last, I write to state that after reading that article I called on Messrs. J. and E. FERRIS, of 48, Great Russell Street, Bloomsbury, W.C., where I was shown a working model, and being struck with its beauty and simplicity of arrangement, I gave them an order for a pair of "Symes" artificial feet, I having had the misfortune to lose both my own feet. I have now worn them for five months continuously, and can safely say that they in every way bear out the advantages claimed for them. They are perfectly lifelike in appearance, strongly made, and have quite a natural action in walking. In fact, judging by my own case, which I think is as good a one as could possibly be found, it is next to impossible for anyone to detect that my feet are artificial. I can walk a good distance without feeling tired, and can walk about without even a stick, although I generally carry one when taking my walks abroad. Being lighter than many other kinds of artificial feet, and fitting so perfectly, they are very comfortable to wear, and there is no fear of wounds forming through friction (which is so frequently the case with many of the artificial limbs made), as Messrs. FERRIS are very careful in making the limb to fit the stump.

My friends and acquaintances continually express their surprise at my walking so well, and I have had on several occasions to show the feet to them before they would believe what I told them.

I went to Messrs. FERRIS on crutches and came away with only a stick, and bearing in mind that it was the first time of wearing the feet, I think that, in itself, proves their superiority.

I have written the above solely for the benefit of any of your readers who have had the misfortune to lose any of their limbs, and to prove the truth of what you said about the artificial limbs in the article above mentioned.

Apologising for encroaching on your valuable space,

I remain, Yours faithfully,

Feb. 9, 1891.

AN EMANCIPATED SUFFERER.

Extract from the NURSING RECORD of 8th October, 1891.—Page 187.

ARTIFICIAL LIMBS.—There is no branch of mechanical art in which so much progress has been made of recent years as that of the manufacture of artificial limbs on a thoroughly scientific basis. There was a time—and not so very long ago, either—when the loss of an arm or leg was looked upon by the unfortunate sufferer as an irreparable calamity. The mechanical substitutes for the missing members were so crude in their design and so clumsy in their mechanism, that comparatively little benefit was derived from their adoption. This is all changed now, for artificial limbs are constructed in the present day which absolutely defy detection, and at the same time ensure the maximum of possible comfort and utility to the wearer. There is one firm in London to whom the successful attainment of these objects is pre-eminently due, inasmuch that they, more than any others, have brought to bear upon the subject all that science could teach and mechanical art perform. Their patents have won the highest awards at every important exhibition for the last fifteen years—a fact quite sufficient in itself to prove the great superiority of their work, and the amount of anatomical knowledge with which they have invested it. The firm to which we refer is that of Messrs. J. and E. FERRIS, 48, Great Russell Street, W.C. On visiting their establishment the other day we were quite astonished at the number and variety of the appliances for the relief of crippled humanity which their mechanical genius has called into existence. Every imaginable form of disablement has been intently studied and scientifically conquered. Perhaps the most striking of the exhibits is the artificial leg, fitted with *an ankle joint with lateral movement*. So closely has the natural ankle been imitated in this instance that, by means of certain mechanical combinations, Messrs. FERRIS have succeeded (where others have failed) in producing motions precisely the same as tibia and fibula with the astragalus in the natural leg. Almost as surprising in its way is the artificial arm, which this eminent firm have made a speciality. The elbow, wrist, and finger-joints are movable, and are controlled by a simple but clever mechanism, which enables them to handle light articles with perfection. Perhaps the best proof of the adaptability of this limb is afforded by an instance in which a gentleman who purchased one of them used the hand almost immediately in inditing a clear and well-written acknowledgement of its arrival to Messrs. FERRIS. Hardly less interesting than the inspection of the handiwork of this firm is the perusal of the volume of gratifying testimonials they have received from all parts of the world. Writing of MESSRS FERRIS exhibit the report of the Royal Military Exhibition, 1890, says: "*We can confidently assert that these artificial limbs are the perfection of mechanical skill applied to an accurate knowledge of anatomy, and they are as different and superior to those of ordinary makers as it is possible to conceive.*" Both Doctors and Nurses in severe accident cases will, we are sure, be glad to know where their unfortunate patients can get the nearest approach to Nature's handicraft in the matter of limbs.







